AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (currently amended) A method of electroplating a quaternary alloy comprising nickel and cobalt, comprising:

providing an electroplating bath comprising an anode, a cathode, water, ionic nickel, ionic cobalt, an amine-borane compound, at least ~~two~~ one ionic alloy ~~metals~~ metal, and at least one acetylenic brightener; and

applying a current to the electroplating bath whereby the quaternary alloy comprising nickel, cobalt, boron, and at least ~~two~~ one alloy ~~metals~~ metal forms on the cathode.

2. (currently amended) The method of claim 1, wherein the at least ~~two~~ one ionic alloy ~~metals~~ metal ~~comprise~~ comprises at least ~~two~~ one ~~metals~~ metal selected from the group consisting of aluminum, antimony, bismuth, ~~boron,~~ copper, gallium, germanium, gold, indium, iridium, iron, lead, manganese, molybdenum, niobium, osmium, rhodium, ruthenium, scandium, silver, palladium, platinum, tantalum, thallium, tin, titanium, tungsten, vanadium, yttrium, zirconium, and zinc in ionic form.

3. (previously presented) The method of claim 1, wherein the acetylenic brightener is selected from the group consisting of acetylenic alcohols, acetylenic amines, acetylenic esters, acetylenic sulfonic acids and sulfonates, alkoxylated acetylenic alcohols, and acetylenic carboxylic acids.

4. (previously presented) The method of claim 1, wherein the electroplating bath further comprises at least one sulfur containing brightener selected from the group

consisting of sulfinic acids, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonimides, sulfimides, and sulfo-betaines.

5. (previously presented) The method of claim 1, wherein the electroplating bath has a pH from about 2 to about 6 and a temperature from about 10 °C to about 90 °C, and a current density of about 1 ASF or more and about 500 ASF or less is applied to the electroplating bath.

6. (currently amended) The method of claim 1, wherein the electroplating bath comprises about 10 g/l or more and about 150 g/l or less of ionic nickel, about 0.5 g/l or more and about 70 g/l or less of ionic cobalt, about 0.01 g/l or more and about 20 g/l or less of boron, about 0.01 g/l or more and about 20 g/l or less of ~~each of~~ the ionic alloy ~~metals~~ metal, and from about 0.001 % to about 5 % by weight of at least one brightener.

7. (original) The method of claim 1, wherein the anode comprises at least one of nickel, cobalt, at least one alloy metal, iridium oxide, platinum, titanium, graphite, carbon, and platinum-titanium.

8. (currently amended) The method of claim 1, wherein the quaternary alloy comprises about 2 % by weight or less of components other than nickel, cobalt, boron, and the at least ~~two~~ one alloy ~~metals~~ metal and the amine-borane compound selected from the group consisting of dimethylamine borane, t-butylamine borane, and hydrates thereof.

9. (currently amended) A method of forming an alloy comprising nickel, cobalt, and at least ~~two~~ one alloy ~~metals~~ metal, comprising:

providing an electroplating bath comprising an anode, a cathode, water, about 40 g/l or more and about 100 g/l or less of ionic nickel, about 1 g/l or more and

about 30 g/l or less of ionic cobalt, about 0.05 g/l or more and about 10 g/l or less of an amine-boron compound, and about 0.05 g/l or more and about 10 g/l or less of ~~each of~~ at least ~~two~~ one ionic alloy ~~metals~~ metal, and from about 0.005 % to about 2.5 % by weight of at least one acetylenic brightener; and

applying a current to the electroplating bath whereby the alloy comprising nickel, cobalt, boron, and at least ~~two~~ one alloy ~~metals~~ metal forms on the cathode.

10. (previously presented) The method of claim 9, wherein the electroplating bath has a pH from about 3 to about 5 and a temperature from about 30 °C to about 80 °C, and a current density of about 10 ASF or more and about 200 ASF or less is applied to the electroplating bath.

11. (previously presented) The method of claim 9, wherein the electroplating bath further comprises at least one sulfur containing brightener selected from the group consisting of sulfinic acids, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonimides, sulfimides, and sulfo-betaines.

12. (previously presented) The method of claim 9, wherein the acetylenic brightener is selected from the group consisting of acetylenic alcohols, acetylenic amines, acetylenic esters, acetylenic sulfonic acids and sulfonates, alkoxylated acetylenic alcohols, and acetylenic carboxylic acids.

13. (previously presented) The method of claim 9, wherein the electroplating bath further comprises a sulfo-betaine brightener.

14. (canceled)

15. (previously presented) The method of claim 9, wherein the electroplating bath further comprises at least one organic brightener slected from the group consisting of

ethylenic alcohols, coumarins, aldehydes, compounds containing a C≡N linkage, and heterocyclics.

16. (currently amended) The method of claim 9, wherein the at least ~~two~~ one ionic alloy ~~metals~~ metal ~~comprise~~ comprises at least ~~two~~ one ~~metals~~ metal selected from the group consisting of aluminum, antimony, bismuth, ~~boron,~~ copper, gallium, germanium, gold, indium, iridium, iron, lead, manganese, molybdenum, niobium, osmium, rhodium, ruthenium, scandium, silver, palladium, platinum, tantalum, thallium, tin, titanium, tungsten, vanadium, yttrium, zirconium, and zinc in ionic form.

17. (currently amended) The method of claim 9, wherein the at least ~~two~~ one ionic alloy ~~metals~~ metal ~~comprise~~ comprises iron ~~and boron~~ in ionic form.

18. (currently amended) A method of plating a substrate with an alloy comprising nickel, cobalt, boron, and at least ~~two~~ one alloy ~~metals~~ metal, comprising:

providing an electroplating bath comprising an anode, a cathode substrate, water, ionic nickel, ionic cobalt, an amine-borane compund, at least ~~two~~ one ionic alloy ~~metals~~ metal, and at least two brighteners selected from the group consisting of sulfur containing brighteners and acetylenic brighteners; and

applying a current to the electroplating bath whereby the alloy comprising nickel, cobalt, boron, and at least ~~two~~ one alloy metals forms on the cathode substrate.

19. (currently amended) The method of claim 18, wherein the at least ~~two~~ one ionic alloy ~~metals~~ metal ~~comprise~~ comprises at least ~~two~~ one ~~metals~~ metal selected from the group consisting of aluminum, antimony, bismuth, ~~boron,~~ copper, gallium, germanium, gold, indium, iridium, iron, lead, manganese, molybdenum, niobium, osmium, rhodium, ruthenium, scandium, silver, palladium, platinum, tantalum, thallium, tin, titanium, tungsten, vanadium, yttrium, zirconium, and zinc in ionic form.

20. (previously presented) The method of claim 18, wherein the acetylenic brightener is selected from the group consisting of acetylenic alcohols, acetylenic amines, acetylenic esters, acetylenic sulfonic acids and sulfonates, alkoxylated acetylenic alcohols, and acetylenic carboxylic acids.

21. (previously presented) The method of claim 18, wherein the sulfur containing brightener is selected from the group consisting of sulfinic acids, sulfonic acids, aromatic sulfonates, aromatic sulfinates, sulfonamides, sulfonimides, sulfimides, and sulfo-betaines.

22. (original) The method of claim 18, wherein the electroplating bath further comprises at least one conductivity salt.

23. (original) The method of claim 22, wherein the conductivity salt is selected from the group consisting of boric acid, sodium sulfate, sodium chloride, potassium sulfate, and potassium chloride.

24. (previously presented) The method of claim 1, wherein the acetylenic brightener is selected from the group consisting of ethoxylated butynediol; 2-butyne-1,4-diol; propargyl alcohol; ethoxylated propargyl alcohol; hydroxyethyl propynyl ether; beta-hydroxypropyl, propynyl ether; gamma-propynyloxy, bis-beta-hydroxyethyl ether 2-butyn-1,4-diol; bis-beta-hydroxypropyl ether 2-butyn-1,4-diol; 1,4-di-(beta-hydroxyethoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-chloropropoxy)-2-butyne; 1,4-di-(beta-gamma-epoxypropoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-butenoxy)-2-butyne; 1,4-di-(2'-hydroxy-4'-oxa-6'-heptenoxy)-2-butyne; 2,4,6-trimethyl N-propargyl pyridinium bromide; 2-methyl-3-butyn-2-ol; 1-(beta-hydroxyethoxy)-2-propyne; and 1-(beta-hydroxypropoxy)-2-propyne.

25. (previously presented) The method of claim 9, wherein the acetylenic brightener is selected from the group consisting of ethoxylated butynediol; 2-butyne-1,4-diol; propargyl alcohol; ethoxylated propargyl alcohol; hydroxyethyl propynyl ether; beta-hydroxypropyl, propynyl ether; gamma-propynyloxy, bis-beta-hydroxyethyl ether 2-butyn-1,4-diol; bis-beta-hydroxypropyl ether 2-butyn-1,4-diol; 1,4-di-(beta-hydroxyethoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-chloropropoxy)-2-butyne; 1,4-di-(beta-gamma-epoxypropoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-butenoxy)-2-butyne; 1,4-di-(2'-hydroxy-4'-oxa-6'-heptenoxy)-2-butyne; 2,4,6-trimethyl N-propargyl pyridinium bromide; 2-methyl-3-butyn-2-ol; 1-(beta-hydroxyethoxy)-2-propyne; and 1-(beta-hydroxypropoxy)-2-propyne.

26. (previously presented) The method of claim 18, wherein the acetylenic brightener is selected from the group consisting of ethoxylated butynediol; 2-butyne-1,4-diol; propargyl alcohol; ethoxylated propargyl alcohol; hydroxyethyl propynyl ether; beta-hydroxypropyl, propynyl ether; gamma-propynyloxy, bis-beta-hydroxyethyl ether 2-butyn-1,4-diol; bis-beta-hydroxypropyl ether 2-butyn-1,4-diol; 1,4-di-(beta-hydroxyethoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-chloropropoxy)-2-butyne; 1,4-di-(beta-gamma-epoxypropoxy)-2-butyne; 1,4-di-(beta-hydroxy-gamma-butenoxy)-2-butyne; 1,4-di-(2'-hydroxy-4'-oxa-6'-heptenoxy)-2-butyne; 2,4,6-trimethyl N-propargyl pyridinium bromide; 2-methyl-3-butyn-2-ol; 1-(beta-hydroxyethoxy)-2-propyne; and 1-(beta-hydroxypropoxy)-2-propyne.